



[7590-01-P]

## **NUCLEAR REGULATORY COMMISSION**

### **10 CFR Part 70**

**[Docket No. PRM-70-9; NRC-2010-0372]**

## **Nuclear Proliferation Assessment in Licensing Process for Enrichment or Reprocessing Facilities**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Petition for rulemaking; denial.

**SUMMARY:** The U.S. Nuclear Regulatory Commission (NRC) is denying a petition for rulemaking (PRM), PRM-70-9, submitted by the American Physical Society (APS or the petitioner). The petitioner requested that the NRC amend its regulations to require that each applicant for an enrichment or reprocessing (ENR) facility license include an assessment of the proliferation risks that construction and operation of the proposed facility might pose. The NRC is also responding to comments received from interested members of the public.

**DATES:** The docket for PRM-70-9 closed on **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

**ADDRESSES:** Please refer to Docket ID NRC-2010-0372 when contacting the NRC about the availability of information for this petition. You may access information related to this petition,

which the NRC possesses and is publicly available, by any of the following methods:

- **Federal Rulemaking Web Site:** Go to <http://www.regulations.gov> and search for Docket ID NRC-2010-0372. Address questions about NRC dockets to Carol Gallagher; telephone: 301-492-3668; e-mail: [Carol.Gallagher@nrc.gov](mailto:Carol.Gallagher@nrc.gov). For technical questions, contact the individuals listed in the FOR FURTHER INFORMATION CONTACT section of this document.

- **NRC's Agencywide Documents Access and Management System (ADAMS):** You may access publicly-available documents online in the NRC Library at <http://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "[ADAMS Public Documents](#)" and then select "[Begin Web-based ADAMS Search](#)." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov). The ADAMS accession number for each document referenced in this document (if that document is available in ADAMS) is provided the first time that a document is referenced. The incoming petition is available in ADAMS under Accession No. ML103260300.

- **NRC's PDR:** You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

**FOR FURTHER INFORMATION CONTACT:** Keith McDaniel, Office of Federal and State Materials and Environmental Management Programs, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; telephone: 301-415-5252, e-mail: [Keith.McDaniel@nrc.gov](mailto:Keith.McDaniel@nrc.gov).

## **SUPPLEMENTARY INFORMATION:**

- I. Summary of Rationale for Denial.
- II. Background.
- III. Petition Assertions and NRC Responses.
- IV. Public Comments on the Petition and NRC Responses.
- V. Determination of Petition.

### **I. Summary of Rationale for Denial.**

The petition requested that the NRC require that each applicant for an ENR facility license provide an assessment of the proliferation risks associated with the construction and operation of the proposed facility. While the NRC recognizes the importance of the petitioner's concerns about minimizing the risk of nuclear proliferation, the NRC is denying the petition for rulemaking. The petitioner has not shown that ENR applicants have a particular insight on proliferation issues or have access to the intelligence resources, capabilities, and information that would enable them to prepare a meaningful proliferation assessment. Therefore, the petitioner has not demonstrated that requiring an applicant to prepare and include such an assessment as part of its application would provide the NRC with meaningful information that would enhance the NRC's decision-making on the applicant's license application nor would such an assessment assist the NRC in carrying out its statutory responsibility to protect public health and safety and promote the common defense. Furthermore, as discussed more fully later in this document, the NRC's existing regulatory program and ongoing oversight of applicants and licensees ensure that they comply with requirements designed to minimize proliferation risks associated with the construction and operation of ENR facilities. These

requirements include measures to prevent, detect, and defend against the unauthorized disclosure of ENR technology and the diversion of associated nuclear materials.

To the extent that the petitioner is concerned about diversion of nuclear materials (or sabotage) at an NRC-licensed facility, the NRC's regulations and oversight activities already address these concerns. In fulfilling its mandate to ensure that the licensing of a facility is not harmful to the public health and safety and is not inimical to the common defense and security, the NRC performs detailed examinations, including inspections, of all aspects of a facility's safeguards and security measures to ensure compliance with regulatory requirements that are intended to prevent, detect, and defend against unauthorized access to the facility and malicious acts directed against the facility. At the time of initial licensing, the NRC reviews the ENR license application to ensure that the applicant has developed and will implement policies, procedures, and programs that enable the applicant to meet all applicable NRC safety and security requirements. Throughout the life of the facility, NRC staff implements a robust inspection and oversight program to ensure that the licensee properly implements all applicable safety and security policies, procedures, and programs set forth in its license and is in compliance with all applicable regulatory requirements. The NRC's regulatory requirements help ensure that facilities are constructed and operated in accordance with proper physical security, safeguards measures, and information protection requirements.

To the extent that the petitioner is concerned about generating greater foreign interest in new ENR technologies and/or a spread of sensitive technology to countries of proliferation concern, the President and the Congress have the primary responsibility for developing and promoting the Federal Government's national nuclear nonproliferation goals and policies. The U.S. Department of State (DOS), working with the U.S. Department of Energy (DOE) and other Federal agencies, has the primary responsibility for implementing these goals and policies domestically and internationally. These agencies have the necessary insights on proliferation

issues and access to the intelligence resources, capabilities and information to perform meaningful analyses of the proliferation risks associated with sensitive technologies, including sensitive ENR technologies. They routinely work through diplomatic and other channels to address proliferation concerns outside of the U.S. In addition to establishing the terms and conditions for U.S. cooperation with countries that have legitimate nuclear energy and research programs, these Executive Branch agencies monitor the international threat environment to ascertain which foreign nations or sub-national organizations are or may be trying to illicitly obtain or use sensitive nuclear technologies, including ENR technology, for proliferation purposes.

The accurate assessment and deterrence of global proliferation risk requires examination of numerous variables, largely in international and military arenas that are far afield from the NRC's core domestic licensing and oversight activities. The NRC interacts regularly with the Federal agencies that have expertise in these areas and is kept informed of existing and emerging proliferation threats and activities. This interaction helps ensure that the NRC's licensing activities are aligned with the nation's nonproliferation goals and policies. These agencies routinely bring to the Commission's attention information pertinent to the NRC's regulatory responsibilities. An NRC domestic licensing proceeding is not the proper forum for establishing national nonproliferation policies and objectives. It would be neither prudent nor useful for the NRC to devote resources in a domestic licensing proceeding to address national policy objectives that are already being addressed by the appropriate Federal agencies with the expertise and mandate to do so.

One of the NRC's primary concerns is to ensure that the facilities it regulates that manufacture or use enriched uranium and plutonium do so safely and securely. The NRC's regulations on physical security, information security, material control and accounting, cyber security, and export control create a tapestry of protection for the material and technology at

NRC-regulated fuel cycle facilities. These regulations, which focus on preventing the theft or diversion of radioactive materials and classified technologies, take proliferation considerations into account. The petitioner has not demonstrated that the NRC's current licensing program is deficient.

The U.S. Government is an active member and participant in the implementation of international treaties and agreements designed to minimize proliferation risks world-wide, including the Nuclear Non-Proliferation Treaty, the U.S. Agreement with the International Atomic Energy Agency (IAEA) regarding the application of safeguards in the U.S., and the U.S. Additional Protocol to that agreement. The NRC takes seriously its responsibility to support the U.S. Government's role in the international nonproliferation regimes to which it is a signatory, and to implement relevant U.S. Government nonproliferation goals and policies at NRC licensee sites. However, the changes sought by the petitioner will not provide the NRC with meaningful information on proliferation risks that would enhance the NRC's domestic licensing process or aid the NRC in implementing the U.S. Government's nonproliferation policies and goals.

In sum, the NRC's existing comprehensive licensing framework, which includes extensive regulatory requirements and ongoing oversight, addresses the facility-specific controls that must be implemented domestically to minimize proliferation risk. The NRC ensures that proper physical security, national and international safeguards, and information security measures are applied at all NRC licensee sites. With insights gained from regular interagency cooperation and information exchange, the NRC also ensures that its licensing activities are aligned with the broader national nuclear nonproliferation policies and goals established by the President and Congress. The petition does not demonstrate how a license-by-license nuclear proliferation assessment would lead to the identification of significantly new or meaningful information beyond that which is already available and that would enhance NRC decision-making on a specific license application.

## **II. Background.**

On November 10, 2010, the NRC received a PRM filed by Francis Slakey on behalf of the APS and assigned it Docket No. PRM-70-9. The NRC published a notice of receipt of the petition and request for public comment in the *Federal Register* (FR) on December 23, 2010 (75 FR 246).

The petition requests that the NRC amend part 70 of Title 10 of the *Code of Federal Regulations* (10 CFR), “Domestic Licensing of Special Nuclear Material,” to require each applicant for an ENR facility license in the United States to include a nuclear proliferation assessment in its application. Specifically, the petition requests that the NRC’s regulations be amended to read:

*§ 70.22 Contents of applications.*

*(o) Nuclear proliferation assessment. Each applicant for the license of an enrichment or reprocessing facility shall include an assessment of the proliferation risks that construction and operation of the proposed facility might pose.*

The following section contains a summary of the petition assertions and NRC responses.

## **III. Petition Assertions and NRC Responses.**

### Assertion 1:

The petition asserted that performing a nuclear proliferation assessment would be consistent with the NRC’s requirement to evaluate whether issuance of a license “would be inimical to the common defense and security or to the health and safety of the public.” The petition further asserted that it does not presume to know the best method for implementing the proposed rule change and makes the following two comments for NRC staff consideration:

- General Electric-Hitachi Global Laser Enrichment LLC (GLE) carried out an independent nuclear proliferation assessment of its laser enrichment facility without: 1) jeopardizing any classified or proprietary information, 2) delaying the timeline, or 3) adding substantially to the cost of the project. Under the APS proposed rule change, all ENR license applicants would be required to carry out such an assessment and submit it to the NRC staff for review.

- The term “Nuclear Proliferation Assessment [Statement]” (NPAS) is used in the Atomic Energy Act (AEA) of 1954, as amended, under Section 123, in the context of U.S. agreements for cooperation with a foreign nation. The NRC participates in these assessments with other Federal entities, in the manner described in Section 123. In particular, the NRC has already engaged in the preparation and review of an NPAS for an enrichment technology. In 1999, the NRC participated with other Federal entities in the NPAS that supported the decision to allow the Separation of Isotopes by Laser Excitation (“SILEX”) technology to be transferred from Australia to the United States. Similarly, under the APS proposed rule change, the NRC staff could work with other Federal entities in reviewing the nuclear proliferation assessment provided by the license applicant.

#### NRC Response to Assertion 1:

The NRC disagrees with the petitioner that an applicant seeking an ENR facility license from the NRC is the appropriate entity to conduct a nuclear proliferation assessment. A commercial entity would not have access to the intelligence resources, capabilities, and information essential to compiling a meaningful nuclear proliferation assessment. An assessment based solely on information available to a commercial entity would be of little value to the NRC in assessing the proliferation risks associated with licensing a particular facility. The task of assessing proliferation risks is best performed by the Federal Government. Other Federal agencies, led by the DOS and including the DOE, the U.S. Department of Defense



(DOD), and the U.S. Department of Commerce (DOC), have primary responsibility for implementing national nonproliferation policies and goals and conducting proliferation assessments of sensitive technologies, including nuclear technologies. The NRC routinely interacts with and provides its technical expertise and support to these agencies.

Once a foreign-developed ENR technology has advanced to the point where an applicant is seeking an NRC license, the appropriate U.S. Government agencies have already made a favorable determination that the technology in question can be adequately protected for development and production within the U.S. For example, the SILEX technology was imported into the U.S. under the terms of an agreement negotiated between the governments of the U.S. and Australia under Section 123 of the AEA (123 Agreement). This agreement allows for the sharing of Restricted Data (ENR technology) between the U.S. and Australia. This Agreement, negotiated by the DOS and approved by the President, included the required NPAS for the SILEX technology.

Under Section 123 of the AEA, the Federal Government prepares an NPAS to demonstrate that the terms of a bilateral agreement are consistent with the requirements of the AEA, with particular emphasis on the adequacy of safeguards and other control mechanisms for the protection of nuclear technologies and materials, and that U.S. assistance provided under the bilateral agreement will not be used by the recipient country to further any military or nuclear explosive purpose. Under Section 123, the DOS is responsible for preparing an NPAS, with technical assistance from other Federal agencies including the NRC. However, Section 123 does not apply to or address license applications submitted to the NRC utilizing a domestically developed ENR technology.

The ENR technology that is solely developed in the U.S. is subject to the requirements set forth in Section 151c of the AEA. Section 151c requires that any person in the United States who makes any invention or discovery useful in the production or utilization of special nuclear

material (SNM) must make a report of such invention or discovery to the DOE. This report need not be made if an application has been filed with the U.S. Patent and Trademark Office. Consistent with the guidance set forth in Atomic Energy Commission's "Novel Methods of Isotope Separation: Procedures for Reports on Research" (37 FR 15393; August 1, 1972), upon receipt of the report, the DOE will provide the person with appropriate guidance on the proper classification of information, components, technology or other matter related to the invention or discovery. If the DOE determines that any of this information, components, technology or other matter is Restricted Data, the person would be directed to protect it in accordance with the requirements set forth in Sections 141 through 143 and Sections 224 through 227 of the AEA. The NRC expects that any sensitive information, components and technology associated with an ENR technology developed in the United States would be subject to these requirements. Furthermore, the NRC is confident that these restrictions on the possession, use and dissemination of Restricted Data adequately address the proliferation risks associated with a domestically developed ENR technology. Therefore, the NRC is also confident that information on a domestically developed ENR technology is adequately protected and proliferation risks associated with a particular ENR technology have already been assessed by the U.S. Government prior to an NRC licensing proceeding. If an applicant receives a license for a facility utilizing a domestically developed ENR technology, that facility would be subject to the NRC's comprehensive regulatory framework.

Consistent with its statutory authorities under the AEA, the Commission will not issue a license for an ENR facility if it determines that such a facility would constitute an unreasonable risk to the health and safety of the public or would be inimical to the common defense and security. The AEA does not require a nuclear proliferation assessment as a prerequisite to the domestic licensing of an ENR facility. However, as explained more fully in response to petition Assertion 2, the NRC's existing comprehensive licensing framework adequately addresses

proliferation risks and concerns associated with access to ENR technology and construction and operation of an ENR facility in the U.S. This framework ensures that access to NRC-licensed ENR facilities and technology is properly controlled through appropriate physical protection, personnel security, and information protection requirements. Furthermore, the NRC, through its ongoing interaction with other Federal agencies, ensures that its licensing framework and oversight activities are aligned with national nonproliferation policies and objectives.

The petitioner pointed out that GLE performed an independent nuclear proliferation assessment of its laser enrichment facility. The NRC notes that this assessment was performed for GLE's own corporate purposes and not in response to an NRC licensing requirement. The GLE did not submit the assessment as part of its application and the NRC did not consider this assessment as part of its licensing review of the proposed GLE facility.

The independent proliferation assessment performed by GLE is separate and distinct from the NPAS performed pursuant to the Section 123 agreement between the U.S. Government and the Government of Australia. This NPAS was prepared by the DOS and supported the decision to allow the SILEX technology to be transferred from Australia to the United States. Thus, the proliferation risks associated with the SILEX technology had already been considered by the Executive Branch prior to GLE submitting a license application to the NRC.

To the extent that the petition is concerned about developing and promoting global implementation of U.S. nonproliferation policies and goals, the DOS, with the assistance of other Federal agencies within the Executive Branch, has primary responsibility, expertise and dedicated resources for leading such efforts. These agencies regularly assess the international threat environment to ascertain which foreign nations or sub-national organizations are or may be trying to obtain or use ENR technology for proliferation purposes and work through diplomatic and other channels to deter such efforts. An NRC domestic licensing proceeding is

not the proper forum for establishing national nonproliferation policies and objectives. Furthermore, the petitioner has failed to demonstrate how a license-by-license nuclear proliferation assessment prepared by an applicant with far less relevant proliferation information available to it than either the NRC or the Executive branch, would assist the NRC in carrying out its statutory responsibility to protect public health and safety and to promote common defense and security when licensing an ENR facility.

One of the NRC's primary concerns is to ensure that the facilities it regulates that manufacture or use enriched uranium and plutonium do so safely and securely. The NRC's regulations on physical security, information security, material control and accounting, cyber security, and export control create a tapestry of protection for the material and technology at NRC-regulated fuel cycle facilities. These regulations, which focus on preventing the theft or diversion of radioactive materials and classified technologies, take proliferation considerations into account. The petitioner has not demonstrated that the NRC's current licensing program is deficient.

#### Assertion 2:

The petition asserted that the NRC's current licensing process is insufficient to address proliferation concerns. The petition stated that the current licensing process uses a "net effect" in which proliferation-relevant issues are spread across the license application and never synthesized. Therefore, nonproliferation is not given an adequate level of attention, because the NRC does not require a nuclear proliferation assessment as a part of its licensing process for ENR facilities. Consequently, the petition claimed that the current process may overlook some properties of the technology which merit attention in a proliferation context.

In addition, the petition stated that key questions regarding the degree of proliferation risk of an ENR technology could go unaddressed under the NRC's "net effect" approach.

According to the petitioner, such questions include, but would not be limited to, the following:

- Could the design of the technology be altered easily to allow for diversion of nuclear material?
- Could the facility be constructed and operated in a manner that is undetectable?
- Are there unique components of the technology whose acquisition would indicate the construction of such a facility and could be easily tracked?

NRC Response to Assertion 2:

The NRC disagrees that its current approach to licensing ENR facilities is insufficient. Safety and security, including proliferation risks, are adequately addressed by the NRC's comprehensive licensing framework, which includes: 1) extensive regulatory requirements, 2) ongoing oversight, and 3) active Federal interagency cooperation. Each piece of this framework is described in the following paragraphs.

With regard to the NRC's extensive regulatory requirements, ENR licensees must comply with applicable requirements in 10 CFR parts 25, 30, 40, 50, 70, 73, 74, 95, and 110. Part 30 of 10 CFR, "Rules of General Applicability to Domestic Licensing of Byproduct Material;" 10 CFR part 40, "Domestic Licensing of Source Material;" 10 CFR part 50, "Domestic Licensing of Production and Utilization Facilities;" and 10 CFR part 70, "Domestic Licensing of Special Nuclear Material;" address the domestic licensing of byproduct material, source material, reprocessing facilities, and facilities that handle SNM, respectively.

Regulations under 10 CFR part 73, "Physical Protection of Plants and Materials," prescribe requirements for the establishment and maintenance of a physical protection system to protect SNM at fixed sites and in transit, and to protect plants where SNM is used. These regulations provide requirements to protect against radiological sabotage and prevent the theft and diversion of SNM. For example, 10 CFR 73.67 and 73.71 include physical protection

requirements for SNM of moderate and low strategic significance and reporting requirements for safeguards events. In addition, 10 CFR 73.73 and 73.74 include requirements for advance notice and protection of export and import shipments of specified materials. Further, appendix B to 10 CFR part 73 contains the Criteria for Security Personnel (training) for these types of facilities and appendix C to 10 CFR part 73 includes detailed requirements for a safeguards contingency plan.

Regulations under 10 CFR part 74, “Material Control and Accounting of Special Nuclear Material,” include requirements for the control and accounting of SNM at fixed sites and for documenting the transfer of SNM. For example, general performance objectives in 10 CFR 74.31, 74.41, and 74.51 address material control and accounting (MC&A) requirements for SNM of low, moderate, and strategic significance. To meet these objectives, licensees must have a Fundamental Nuclear Material Control Plan that includes, for example, a measurement control program, physical inventories, and the ability to aid in or conduct investigations of SNM losses. Additionally, 10 CFR 74.33 requires licensees authorized to possess equipment capable of enriching uranium or operating an enrichment facility, and producing, or possessing a specified amount of SNM, to have an MC&A system that will protect against and detect unauthorized production of SNM. Finally, 10 CFR 74.11 includes requirements for licensees that possess specified quantities to report loss, theft or attempted theft or unauthorized production of SNM to the NRC. By requiring capabilities to measure, control, detect, and report the loss, theft or attempted theft or unauthorized production of SNM, these regulations address nuclear proliferation risks and the concern stated in the petition’s first question (“Could the design of the technology be altered easily to allow for diversion of nuclear material?”).

The requirements in 10 CFR part 95, “Facility Security Clearance and Safeguarding of National Security Information and Restricted Data,” and 10 CFR part 25, “Access Authorization,” require licensees to maintain programs for protecting and preventing unauthorized access to

classified National Security Information, Restricted Data, and associated classified technology. These requirements are designed to restrict access to nuclear technology to only those with a need-to-know and ensure that adequate controls exist to protect and handle such information through physical protective measures, information security requirements, and administrative security controls. The NRC requirements address the actual and postulated threats against facilities and the sensitive information they possess. These regulations are part of the NRC's extensive effort to address proliferation risks and concerns by ensuring that only authorized individuals have access to classified information and technologies, and they are legally obligated to protect it from unauthorized disclosure.

In addition, 10 CFR part 110, "Export and Import of Nuclear Equipment and Material," includes requirements for controlling the export and import of nuclear materials and equipment by NRC or Agreement State licensees. Export license reviews address proliferation concerns by requiring the U.S. Government to obtain assurances from the recipient foreign government that, among other things: 1) IAEA safeguards will be applied as required by Article III (2) of the Treaty on the Nonproliferation of Nuclear Weapons; 2) adequate physical security measures will be maintained; and 3) the material being exported will not be transferred to another country without prior U.S. Government approval. Domestic importers of nuclear materials are required to be licensed by the NRC or an Agreement State to possess the material before they are allowed to import the material into the U.S. By controlling import and export of nuclear materials and equipment, these requirements address proliferation risks and concerns.

"Ongoing oversight" refers to the NRC's inspection of licensee and applicant facilities, to enforce compliance with NRC regulatory requirements. If any regulatory concerns are identified during these inspections, licensees may be required to take corrective actions, including implementing compensatory measures as appropriate, to address these concerns.

For example, the NRC staff conducts annual inspections of all enrichment licensees and their contractors to ensure compliance with 10 CFR part 25 and 95 requirements. The DOE, under a reimbursable agreement with the NRC, participates in these inspections, certifying and accrediting on behalf of the NRC all classified computer networks used by enrichment licensees and their contractors. If security risks are identified during these inspections, the licensee must take steps to correct the security risk. Additionally, if these inspections identify generic risks applicable to all licensees, the NRC will supplement its regulations and/or issue orders addressing these risks, as appropriate.

The term “active interagency cooperation” refers to the NRC’s ongoing contact and active collaboration with other government agencies to assist in meeting the U.S. Government’s broader national nuclear nonproliferation goals and policies. The NRC interacts continuously with other Federal agencies at a variety of levels to share information related to various threats and activities, including those related to proliferation concerns, inside and outside the U.S.

The President and the Congress have the primary responsibility for developing and promoting the Federal Government’s national nuclear nonproliferation goals and policies. The DOS, working with the DOE and other Federal agencies, has the primary responsibility for implementing those goals and policies both domestically and internationally. The NRC actively cooperates with the DOS, the DOE, and other Federal agencies including, but not limited to, the DOC, the DOD, the U.S. Department of Homeland Security, the Federal Bureau of Investigation, and the various intelligence agencies in this process. Through this cooperation, the NRC ensures that its licensing activities are aligned with the Nation’s nonproliferation goals and policies.

In addition to these cooperative activities, the NRC also collaborates with representatives of other U.S. Government agencies in various multilateral and bilateral initiatives to promote nuclear safety and security. For example, with respect to exports, the



NRC actively supports U.S. Government participation in the Nuclear Suppliers Group (NSG). The NSG is a group of nuclear supplier states that seeks to prevent the proliferation of nuclear weapons through the implementation of two sets of guidelines for nuclear exports and nuclear related exports. The NSG guidelines are: 1) Guidelines for the Export of Nuclear Material, Equipment and Technology (INFCIRC/254/Rev.10/Part1); and 2) Guidelines for Transfers of Nuclear Related Dual-Use Equipment, Materials, Software and Related Technology (INFCIRC/254/Rev.7/Part2).

The NSG guidelines aim to ensure that nuclear trade for peaceful purposes does not contribute to the proliferation of nuclear weapons or other nuclear explosive devices, and that the international trade and cooperation in the nuclear field is not hindered unjustly in the process. The NRC is responsible for implementing the NSG Part 1 guidelines, consistent with its authority under the AEA, in 10 CFR part 110. The DOC implements the NSG Part 2 guidelines in its Export Administration Regulations. The NRC's export licensing criteria are consistent with, and in some instances more comprehensive than, the NSG Part 1 guidelines. Part 1 of the NSG guidelines contains a "Trigger List" that is illustrative of commodities "especially designed or prepared" for the processing, use, or production of special fissionable material. In addition to the export licensing criteria that must be met, 10 CFR part 110 also incorporates Part 1 by essentially reproducing the Trigger List in several appendices to part 110. While 10 CFR part 110 is maintained and updated to be consistent with the NSG guidelines, the appendices to 10 CFR part 110 are illustrative because the NRC has long recognized that the type of nuclear technologies and equipment that need to be controlled for proliferation purposes is dynamic and will continue to evolve. The NRC's 10 CFR part 110 regulations, and ongoing interaction with the DOC and other Federal agencies, ensure that the NRC has access to and considers relevant information on ENR technologies. This information exchange with other U.S. Government agencies and multilateral organizations such as the NSG, addresses the concerns

raised in the petitioner's third question: "Are there unique components of the technology whose acquisition would indicate the construction of such a facility and could be easily tracked?"

The NRC also works closely with the DOE to ensure classified information is protected. The DOE requirements for protection of classified material are generally reflected in NEI 08-11, "Information Security Program Guidelines For Protection Of Classified Material At Uranium Enrichment Facilities," published by the Nuclear Energy Institute (NEI). In addition to complying with the NRC's requirements for the protection of classified material, all the NRC's enrichment licensees and their contractors that possess classified material have voluntarily committed to adhere to additional information security measures in NEI 08-11. These measures are contained in each licensee's Standard Practice Procedures Plan (security plan), which is approved by the NRC as part of the issuance of a facility security clearance prior to facility operation.

Finally, the petition's second question stated that the NRC's "net effect" may not address the question "could the facility be constructed and operated in a manner that is undetectable?" As described further in response to petition Assertion 4, the NRC is not aware of any new ENR technologies that would be too small or too efficient to detect. The NRC has determined that existing requirements and controls minimize the risk of proliferation by, for example, protecting against unauthorized access and disclosure, as well as theft and diversion of nuclear materials and equipment. Additionally, the NRC expects that future technologies and facilities, such as the one proposed by GLE, will emit unique environmental signatures that will enable identification of a specific nuclear facility.

Therefore, for the reasons previously explained, the NRC has determined that the multiple layers of its comprehensive licensing framework adequately address proliferation risks and concerns associated with the NRC licensing of domestic ENR facilities. Separate from the license application reviews, the NRC continuously reviews the domestic and international threat

environment for changes that pose credible and specific threats to the NRC or its licensees. As new threats are identified, the NRC will supplement its requirements by rule or order, as appropriate, and consistent with its statutory authority to protect the public health and safety and to promote the common defense and security of the United States.

Assertion 3:

The petition asserted that the requested rule change is in the national security and energy interests of the U.S., and that energy security, national security and nonproliferation are coupled. The petition stated its support for nuclear power, but emphasizes that nuclear power and nuclear materials must be deployed in a safe, secure, and responsible manner.

NRC Response to Assertion 3:

The NRC agrees that nuclear power and nuclear materials must be developed and utilized in a safe, secure and responsible manner. Furthermore, the NRC agrees that the security of the Nation's energy supply and reducing proliferation risks are related to the national security of the U.S. As previously explained in the response to petition Assertion 2, the NRC's comprehensive licensing framework adequately addresses proliferation concerns associated with the construction and operation of an ENR facility in the United States. The petitioner fails to demonstrate that the NRC's licensing framework does not adequately protect the public health and safety and promote the common defense and security of the U.S.

Assertion 4:

The petition asserted that, over the next several years, the NRC will be reviewing license applications for new technologies that could carry substantial proliferation risks. This assertion is based on findings in a report entitled "Technical Steps to Support Nuclear Arsenal

Downsizing,” released on February 18, 2010, by an APS Study Group, “APS Panel on Public Affairs” (see <http://www.aps.org/link/downsizing.cfm>). The petition stated that the membership of this APS Study Group comprises some of the country's leading experts on both the technical and policy issues related to nuclear power, nuclear weapons, and proliferation.

The petition asserted that the APS Study Group found that some of the new technologies could be proliferation “game changers,” since they would lead to smaller, more efficient, and possibly less expensive methods for the production and use of nuclear materials that would be more difficult to detect. The APS Study Group cited laser isotope separation as an example of a new technology that is substantially smaller and more energy efficient than centrifuge enrichment technology. Consequently, the petition stated that this technology has raised proliferation concerns. The petition stated that the IAEA is sufficiently concerned that existing detection technologies are not adequate to address detection of covert facilities, and that the IAEA established a division specifically tasked with improving detection technology. The petition also stated that the DOE has a similar program tasked with carrying out research and development to improve detection technology, with one effort dedicated to detecting laser enrichment.

#### NRC Response to Assertion 4:

The NRC acknowledges that new technologies may pose proliferation risks. However, the NRC is not aware of any existing ENR technologies that cannot be detected or pose proliferation risks that are not addressed by the NRC’s existing licensing framework. Similarly, the NRC is not aware of, and the petition did not identify, any new technologies that would be “game changers” because they would be less expensive, too small, or too efficient to detect.

For example, on September 25, 2012, the NRC issued a license for the GLE facility in Wilmington, North Carolina. The GLE has stated that its laser enrichment facility will be more

efficient and cost-effective than a comparably sized gas centrifuge plant. That facility will not, however, be small or difficult to detect. Rather, the GLE facility's energy consumption will be similar to that of a gas centrifuge facility and the facility's size will be only one-third to one-half smaller than that of a gas centrifuge facility. The proposed facility will need nearly 100 acres, its main operations building will have an area of approximately 600,000 square feet, and there will be sections approximately 160 feet high. Additionally, the NRC expects that technologies and facilities, such as the one proposed by GLE, will emit unique environmental signatures that will enable identification of a specific nuclear facility.

The NRC recognizes that the IAEA and the DOE are developing new detection methods for clandestine facilities and that these technologies will be important in international efforts to combat nuclear proliferation. The NRC staff will use information related to new detection technologies from these IAEA and DOE programs as appropriate in its licensing programs.

The NRC continues to coordinate with other Federal agencies to assess the threat environment and work with licensees and the nuclear industry to develop appropriate strategies and requirements to address identified threats. Should the NRC identify new threats or unique proliferation risks that are not currently addressed by its licensing framework, the NRC will take appropriate steps (e.g., issuance of orders or revised regulations) to address those risks.

#### Assertion 5:

The petition asserted that the NRC can address new risks by elevating the priority of nonproliferation, which could best be accomplished by including a nuclear proliferation assessment in the ENR licensing process. The petition stated that members of the U.S. House of Representatives' Nuclear Security Caucus reached a similar conclusion in a letter dated June 30, 2010, which they sent to the Commission (ADAMS Accession No. ML101870023). In this letter, the members of the Nuclear Security Caucus discussed the proliferation paths

associated with enrichment programs, such as the theft at the URENCO facility in the Netherlands. Specifically, the members noted that the “uncovering of A.Q. Khan's clandestine proliferation networks has taught us that we can never be too careful in protecting nuclear materials and technologies.” The members concluded that while a formal assessment of the proliferation risks of the technology will not ensure that nuclear technologies are not diverted to weapons production or other military purposes, nuclear proliferation assessments can provide an additional and perhaps crucial layer of protection against their proliferation and use against the U.S.

#### NRC Response to Assertion 5:

The NRC agrees that the U.S. must remain vigilant in protecting nuclear materials and technologies. The NRC is committed to protecting public health and safety and promoting the common defense and security. Protecting the Nation’s nuclear facilities and materials is a priority of the NRC that is articulated in the NRC’s mission statement and is one of the two strategic goals identified in the NRC’s Strategic Plan. As described in response to petition Assertion 2, the NRC’s regulatory requirements and programs, and ongoing interagency cooperation, adequately address existing proliferation risks and concerns. The NRC is not aware of any new information that would lead the NRC to conclude that its licensing framework does not adequately protect the public health and safety and the common defense and security.

Furthermore, the NRC’s licensing framework is flexible and adaptable; the NRC continually assesses the threat environment and coordinates with its Federal partners, including the DOS, DOE, and DOC. Should the NRC identify new risks that are not addressed by its licensing framework, the NRC would take appropriate steps to address these risks. Accordingly, the NRC disagrees that the best way to address proliferation concerns is to require an ENR applicant to submit a proliferation assessment.

Assertion 6:

The petition asserted that the successful commercialization of ENR technologies may itself stimulate the interests of proliferants.

NRC Response to Assertion 6:

The NRC's licensing responsibilities under the AEA are regulatory in nature; the NRC does not encourage or discourage the development of a particular technology. Moreover, it is not the NRC's role, nor is it within the NRC's capabilities, to restrict inquiry into the feasibility of scientific concepts associated with the nuclear fuel cycle. Whether or not the issuance of an NRC license may demonstrate that a technology is feasible or commercially viable is not a consideration in the NRC licensing process.

When a license application is received, the NRC reviews the application and makes a licensing determination consistent with its statutory responsibility to protect the public health and safety and promote the common defense and security. As described in response to petition Assertion 2, the NRC has determined that its licensing framework enables it to meet these responsibilities. However, should the NRC identify new risks or threats, it would supplement this framework consistent with its statutory responsibility, as appropriate.

**IV. Public Comments on the Petition and NRC Responses.**

The notice of receipt of the PRM invited interested persons to submit comments. The public comment period closed on March 8, 2011. The NRC received responses from 2,389 commenters. Most of these responses were identical form e-mails from individuals who supported the petition. There were also 50 comment letters from individuals, members of

Congress, and interested groups that supported the petition. Two comment letters, one from a nuclear industry representative and one from an individual, opposed the petition.

Combining similar public comments resulted in 19 comment categories. A summary of the comments and the NRC's responses follows.

**Comment Category 1:** *NRC's authority and obligation to require a nuclear proliferation assessment as part of the licensing process.*

The petition and 42 comment letters included statements related to this category. The petition requested that the NRC include nuclear proliferation assessments as part of the domestic licensing process, stating that such an assessment is consistent with the NRC's requirement to evaluate whether the issuance of a license "would be inimical to the common defense and security or to the health and safety of the public." Forty-one commenters stated either that the NRC has the authority or that the NRC has the obligation to require its applicants to perform a nuclear proliferation assessment. One commenter added that it is within the capabilities of the NRC staff to review such an assessment. One commenter stated that the Congress is reviewing the AEA and is currently discussing whether to include a nuclear proliferation assessment in the NRC's regulatory process. One commenter asserted that the AEA contains no requirement for the NRC to perform a nuclear proliferation assessment in the context of domestic licensing.

**NRC Response to Comment Category 1:**

As discussed in the response to petition Assertion 2, the NRC has determined that its licensing framework adequately addresses proliferation concerns associated with the licensing of ENR facilities and that requiring such an assessment would not assist the NRC in carrying out its statutory responsibility to protect public health and safety and promote the common



defense. If the NRC finds supplementation of its requirements is needed, it will take appropriate action, consistent with its statutory responsibility.

**Comment Category 2:** *Energy security, national security and nonproliferation are coupled.*

One commenter stated that there is a direct relationship between fuel for nuclear energy and nuclear weapons proliferation, because uranium enrichment provides fuel for nuclear power and the material for making a nuclear bomb.

**NRC Response to Comment Category 2:**

The NRC acknowledges that uranium enrichment provides fuel for nuclear power reactors. However, the NRC disagrees that fuels for nuclear energy and nuclear weapons proliferation have a direct relationship. The NRC-licensed nuclear power plants do not use weapons-grade SNM, and any NRC-issued commercial enrichment license would not authorize the production of weapons-grade SNM. In addition, the NRC has an inspection program that ensures that enrichment facilities are not modified to produce weapons-grade SNM.

**Comment Category 3:** *New nuclear technologies may present unique proliferation risks.*

Thirty-five comment letters made statements related to this category. The petition stated that over the next several years, the NRC will be reviewing license applications for new technologies that could carry substantial proliferation risks. Twenty-two commenters made a similar comment. Nineteen commenters agreed with the petition's statement that new technologies could be proliferation "game changers," since they would lead to smaller, more efficient, and less expensive technology for the production and use of nuclear materials that would be more difficult to detect.

Additionally, one commenter requested that the NRC conduct a thorough review of all technology involved in the laser enrichment project to identify the technologies or components that are most proliferation-prone or that would be hardest to acquire by other countries or would-be proliferators. Another commenter asserted that new proliferation risks from laser enrichment methods are not very amenable to the “black box” technique (exporting technology in a “black box” to protect proprietary and proliferation secrets), stating that this method is currently used to export technology from enrichment and reprocessing plants.

### **NRC Response to Comment Category 3:**

The NRC acknowledges that new enrichment technologies may pose proliferation risks, and therefore facilities using such technology must be subject to a comprehensive regulatory regime to ensure the safety and security of that technology. However, as noted in response to petition Assertion 2, the NRC has a comprehensive licensing framework designed to ensure that ENR facilities are operated in a safe and secure manner. Further, as noted in response to petition Assertion 4, the NRC is not aware of, and the petitioner and commenters have not identified, any new ENR technologies that “are game changers” because they are too small, efficient, or inexpensive to detect.

As described in response to petition Assertion 2, the NRC also participates with other U.S. Government agencies in various organizations such as the NSG, which seek to prevent the proliferation of nuclear weapons through the implementation of two comprehensive export control lists. The DOE, DOC, and DOS respectively regulate exports of nuclear reactors and fuel cycle technologies, dual-use components and technologies, and U.S. Munitions Lists commodities to ensure peaceful use and to prevent the proliferation of nuclear weapons. The NRC licensees are required to comply not only with NRC regulations but all relevant Federal laws and regulations.

The “black box” concept mentioned by one commenter is a mechanism that can be used to control access to information and/or technology by ensuring that only individuals with a verified need-to-know and appropriate clearance are given access to it. The black box concept is consistent with the NRC’s protective measures for restricting access to sensitive and classified technologies and/or information. The NRC’s regulations governing access to such technologies and information implement Federal Government standards and requirements for the protection of sensitive and classified technologies and/or information. Although the “black box” concept provides a supplemental means to protect classified information and/or technology, its use may not supersede NRC regulatory requirements.

**Comment Category 4:** *Commercialization of enrichment technology may increase interest, which could result in increased proliferation risks. Even a non-commercially viable process can pose proliferation risks, if the process is successfully implemented.*

Twenty-one comment letters made statements related to this category. The petition asserted that commercialization of the technology may itself stimulate proliferation interests. Sixteen commenters agreed with the petitioner. A commenter stated that successful development of a commercially viable process is irrelevant, because even inefficient pilot-scale facilities can pose significant proliferation risks. Another commenter stated that feasibility, not commercial viability, is the key determinant of proliferation risks. Finally, a commenter asserted that GLE’s operation of a test loop, and potential move to a larger facility would be a clear signal that the technology works, thus attracting interest in it.

**NRC Response to Comment Category 4:**

As explained in response to petition Assertion 6, the NRC’s licensing responsibilities are regulatory in nature. The NRC, as an independent regulatory agency, does not encourage or

discourage the development of a particular technology. In addition, it is not the NRC's role, nor is it within the NRC's capabilities, to restrict inquiry into scientific concepts associated with the nuclear fuel cycle. A concern that the issuance of an NRC license may demonstrate that a technology is feasible or commercially viable is not a consideration in the NRC licensing process. When evaluating a license application, the NRC's role is to determine if the applicant has satisfied NRC licensing requirements, including demonstrating that a proposed facility would not constitute an unreasonable risk to the health and safety of the public or would not be inimical to the common defense and security. If the NRC determines that an applicant has failed to satisfy NRC licensing requirements, including demonstrating that the facility or technology could not be operated in such a manner, the NRC would deny the license application.

To the extent that the commenters are concerned that the issuance of a license or the successful operation of a new enrichment technology may increase international interest in that technology, as explained in response to petition Assertion 2, the NRC's extensive regulatory requirements, ongoing NRC oversight, and other Federal programs ensure that classified design details of the technology are protected from potential proliferators.

**Comment Category 5:** *Sufficiency of the current regulatory process to address nuclear proliferation issues.*

Fourteen comment letters included statements related to this category. Twelve commenters supported petition Assertion 2 that the current regulatory process is insufficient to address nuclear proliferation issues, while two commenters took the opposing view.

One commenter supporting the petition stated that a regulatory gap exists in the NRC's regulations that would be filled by requiring a nuclear proliferation assessment in domestic licensing. The commenter claimed that the gap in the current domestic licensing framework

restricts consideration of proliferation issues to the narrow questions of whether or not a facility meets the NRC's regulations for material protection, control and accounting, and protection of sensitive information. The commenter stated that such a limited review does not take into account broader issues related to the indirect impacts of NRC licensing of sensitive fuel cycle facilities on the global nonproliferation regime.

Another commenter supporting the petition stated that the current regulatory process for assessing proliferation is defective in that it does not provide an integrated risk assessment of this potential but is instead less focused and therefore less definitive than it needs to be to fulfill the NRC's "common defense and security" mission. One commenter stated that requiring a nuclear proliferation assessment for domestic licensing would encourage awareness of proliferation concerns in commercial entities that could be translated into design features that improve the proliferation resistance of future facilities. A commenter stated that when considering proliferation concerns of a pending NRC license application, the NRC should seek the views of other government agencies responsible for providing for the common defense, and that the NRC have staff capable of formally assessing these views. One commenter mentioned that currently no one is conducting a nuclear proliferation assessment of nuclear technology. Similarly, another commenter stated that while a nuclear proliferation assessment alone will not curtail proliferation, it can provide an added layer of protection that can help restrict the covert spread of advanced nuclear fuel technologies.

One commenter stated that whether new ENR technologies would significantly increase the risk of proliferation depends on many factors, including: 1) the probability of detecting a clandestine facility; 2) whether a declared facility can be effectively safeguarded; 3) whether technology can be used in the production of highly-enriched uranium (relevant for enrichment technologies only); and 4) whether the intellectual property for technology that the NRC chooses not to license would revert to a foreign entity for development instead. The commenter asserted

that, due to the technical nature of these factors, the NRC is the most qualified body to conduct a proliferation assessment and should require a nuclear proliferation assessment as part of its domestic licensing process.

One commenter supporting the petition stated that because so few facilities are actually selected for safeguards by the IAEA in the U.S., there is less awareness here among industry and operators than abroad.

One commenter opposing the petition stated that although the petitioner rightly invokes elements of the AEA that speak to licensing activities that “would be inimical to the common defense and security or to the health and safety of the public,” the petition fails to indicate what current shortfalls there are in licensees’ obligations regarding information protection or physical protection of such facilities.

#### **NRC Response to Comment Category 5:**

Commenters claim the NRC’s existing regulatory framework is not sufficient for several reasons, including: 1) no one is conducting a nuclear proliferation assessment of nuclear technology risks, 2) there is a regulatory gap because the NRC’s consideration of proliferation risks is too narrow, and 3) the NRC’s process fails to include an integrated risk assessment. The NRC disagrees with these comments. As explained in response to petition Assertion 2, the NRC’s existing comprehensive licensing framework adequately addresses proliferation risks by, for example, including requirements to prevent unauthorized disclosure of classified matter and technology, and provide physical protection of nuclear equipment and materials.

The commenters have not identified a regulatory gap or proliferation concern that is not adequately addressed in the current licensing framework. The NRC is not aware of, and the petitioner and commenters did not identify, any specific shortcomings in the NRC’s comprehensive licensing framework where a nuclear proliferation assessment by license

applicants would provide significant and meaningful information that would enhance NRC decision-making or provide an “additional layer of protection” against proliferation risks necessary for the NRC to carry out its responsibilities.

In addition, commenters suggest that the NRC does not adequately consider broader nuclear nonproliferation policies and goals. Specifically, commenters stated that the NRC does not consider the impacts that its domestic licensing actions may have upon the broader global nonproliferation regime, and the NRC should consult with other agencies when considering the proliferation risks of a pending license application. As described in response to petition Assertion 2, the NRC interacts with other Federal agencies and receives information regarding various threats and activities, including those related to proliferation concerns. In addition, the NRC routinely cooperates with other U.S. Government agencies on matters relating to the nation’s security. Through this extensive cooperation, the NRC ensures that its licensing activities are aligned with the nation’s larger nonproliferation goals and policies. Further, the U.S. Government, often supported by the NRC, is actively engaged in the international nonproliferation regime as a Member State at the IAEA, the NSG, and the Nuclear Energy Agency.

In response to the commenter stating that a nuclear proliferation assessment requirement would encourage awareness of proliferation concerns that could be translated into design features that improve the proliferation resistance of future facilities, the NRC’s existing licensing framework provides regulatory requirements that address design features needed to protect classified information, ensure physical security of licensed material, and protect against the loss, theft or attempted theft, or unauthorized production of SNM. Applicants of ENR facilities would be aware of these design requirements and would be required to address them in their facility designs and in their license applications. A proliferation assessment, therefore, would add little benefit to what is already required under the existing regulations. As discussed

in response to Comment Category 13, incorporation of safeguards and MC&A requirements early in the design phase can be more efficient than retrofitting them later.

Finally, the NRC agrees that there are a number of factors that could influence whether a new ENR technology would increase the risk of proliferation, including for example: 1) the probability of detecting a clandestine facility; 2) whether a declared facility can be effectively safeguarded; 3) whether technology can be used in the production of highly-enriched uranium (relevant for enrichment technologies only); and 4) whether the intellectual property for technology that the NRC chooses not to license would revert to a foreign entity for development.

In response to the factor regarding clandestine facility detection, the NRC is not aware of any commercial enrichment plant that will not have a significant footprint and will therefore be difficult to detect, including GLE's proposed laser enrichment facility. However, as previously described, the NRC's licensing framework is flexible and adaptable. If a future technology presents proliferation risks that are not addressed by the current framework, the NRC will act appropriately to protect the public health and safety and promote the common defense and security.

The NRC agrees that to address proliferation risks, ENR facilities need to have adequate safeguards. Existing NRC requirements and on-going NRC oversight programs ensure that all NRC-licensed nuclear facilities implement safeguards measures. In addition, certain U.S. facilities may be subject to IAEA safeguards inspections.

The NRC is also sensitive to the concern that new technologies can be used to produce highly-enriched uranium. All enrichment facility applicants have stated in their applications specific selected possession limits that limit enriched uranium production to enrichments no greater than 10 weight percent uranium 235. Highly-enriched uranium has a greater than 20 percent concentration of uranium 235 or uranium 233. Although it is theoretically possible to



make equipment changes at a facility to produce enrichments greater than the facility's licensed possession limit, the NRC's inspections are designed to verify that licensee facilities do not engage in diversion, unauthorized production, and over-enrichment of SNM.

Finally, the NRC recognizes that if it denies a license, there is a possibility that the intellectual property for the technology may be developed in another country. However, as a regulatory agency, when making a particular licensing decision the NRC does not consider whether the intellectual property or technology associated with a license that is denied would revert to a foreign entity. As described in response to petition Assertion 6, the NRC's licensing responsibilities under the AEA are regulatory in nature. The NRC will review each license application and make a licensing determination consistent with its statutory responsibilities. If the NRC determines that issuance of a license would be harmful to the public health and safety or inimical to common defense and security, the NRC will deny that license application.

**Comment Category 6:** *Suggested methods for implementing the proposed rule.*

Five comment letters included statements related to this category. Several commenters provided suggested methods for implementing the petitioner's proposed rulemaking.

One commenter suggested that, in order to determine the most sensitive areas of laser enrichment technologies and determine if they pose additional risks, the NRC should baseline the risks of gaseous diffusion and centrifuge technology versus laser enrichment technologies.

Several commenters suggested specific content for a required nuclear proliferation assessment. One commenter assumed that in reviewing a nuclear proliferation assessment, the NRC would go beyond the document itself and take into account classified information pertaining to proliferation risks relevant to the licensing action. Another commenter stated that a nuclear proliferation assessment should address the novelty of the technology and the U.S. and international measures that will be put in place to prevent proliferation. While another

commenter stated that in addition to the technical considerations mentioned in the petition, a proliferation assessment should take a broader view and analyze the potential global policy impacts associated with the NRC licensing sensitive fuel cycle facilities. The commenter cited, as an example, the DOE's 1999 "Nonproliferation Impacts Assessment for the Treatment and Management of Sodium-Bonded Spent Nuclear Fuel" (DOE/EIS-0306D) that considered three technical factors and four policy factors associated with a proposal to use a U.S. facility to chemically treat a stockpile of U.S. spent nuclear fuel.

One commenter stated that a nuclear proliferation assessment could be one vehicle for remedying the issues identified in the APS petition but believes that the NRC staff could also identify an equivalent alternative to address the petitioner's assertions that maximized staff efficiency, transparency, and effectiveness.

#### **NRC Response to Comment Category 6:**

The NRC does not agree that laser enrichment facility risks need to be baselined against the risks of gaseous diffusion plants and centrifuge technology to determine the most sensitive areas of laser enrichment technologies and determine if they pose additional risks.

The NRC's regulations apply to all current and future commercial enrichment facilities in the United States. As discussed in response to petition Assertion 2, the NRC has determined that its existing licensing framework adequately addresses proliferation risks by, for example, including requirements to prevent unauthorized disclosure of classified matter and sensitive technologies, and provide physical protection of nuclear equipment and materials. Because the existing licensing framework is adequate, a baselining study of other facilities is not necessary to assess regulatory compliance or proliferation risks.

The NRC will not speculate about suggested content for a "required" nuclear proliferation assessment. As previously discussed, the NRC has determined that in light of the current

licensing framework, revising 10 CFR part 70 to require a proliferation assessment would not provide new and significant information that would enhance the NRC's decision-making or assist the NRC in carrying out its statutory responsibilities.

**Comment Category 7:** *The NRC's decision to license new technology will set a precedent for the international nuclear industry.*

Two comment letters included statements related to this category. One commenter stated that the NRC continues to have influence as a leader in the movement to improve nuclear safeguards, safety, and security; thus, an NRC decision to require a nuclear proliferation assessment as part of the licensing process would help move international nuclear industry consensus in that direction. Another commenter stated that the NRC's approval of new technology is likely to serve as a precedent for greater use elsewhere.

**NRC Response to Comment Category 7:**

The NRC does not agree that its decision to license a domestic ENR facility utilizing a particular enrichment technology would necessarily cause other countries to develop that particular technology. Many other factors would play a role in a particular government's pursuit of ENR technology, including its political will, technical expertise, financial capital, and international obligations. Additionally, as stated in response to petition Assertion 1, speculative assertions regarding the potential influence of NRC decisions are not considered in domestic licensing proceedings. The DOS, working with the DOE and other Federal agencies, has the primary responsibility for implementing the Federal Government's national nuclear nonproliferation goals and policies. The NRC does strive to improve nuclear safety and security internationally as well as domestically. However, as stated previously, the NRC does not agree with the comment that requiring the NRC's licensees to submit a nuclear proliferation

assessment of the risks of constructing and operating an ENR facility would further the goal of improving nuclear safeguards, safety, or security.

**Comment Category 8:** *Industry is committed to protecting against proliferation.*

One comment letter opposing the petition stated that 1) uranium enrichment facilities have voluntarily committed to implement additional measures to enhance the protection of information associated with classified enrichment technologies, and 2) these additional commitments are incorporated into facility-specific security plans. The commenter also stated that its organization has developed a guidance document endorsed by the NRC that provides guidance to enrichment facility licensees to assist in protecting against proliferation of classified technology, information, and equipment.

**NRC Response to Comment Category 8:**

The NRC recognizes that NRC enrichment licensees and their contractors that possess classified material have voluntarily committed to adhere to additional information security measures not addressed in 10 CFR part 95. These voluntary security enhancements are set forth in NEI 08-11, “Information Security Program Guidelines for Protection of Classified Material at Uranium Enrichment Facilities,” published by the NEI. These measures are contained in each licensee’s security plan. This plan is reviewed and approved by the NRC as part of the issuance of a facility security clearance prior to facility operation. Adherence to the security plan is also required by a condition in each license.

**Comment Category 9:** *NRC should consider terrorism as part of the licensing process.*

Two comment letters included comments in this category. One commenter stated that the ever-present threat of terrorism is a reason for a nuclear proliferation assessment being part

of the licensing process. The other commenter suggested that the petition's suggestion to perform a nuclear proliferation assessment does not go far enough, and instead, a "nuclear proliferation and terrorism assessment" should be required. This assessment would evaluate "beyond-design-basis" proliferation and terrorism impacts by considering diversion and theft scenarios by adversaries with capabilities exceeding the design basis threats for theft or diversion of SNM. The commenter claimed that this would make the assessment comparable to the aircraft impact assessment required for new nuclear plant applications in 10 CFR 50.150.

#### **NRC Response to Comment Category 9:**

The NRC agrees that protection measures for its regulated facilities should address known threats, including the threats from overt, malevolent acts that may involve violence. The NRC interacts regularly with its Federal partners to remain current on potential threats directed against NRC-licensed facilities and keeps its licensees informed of changes to the threat environment. The NRC's physical protection requirements in 10 CFR part 73 require that licensees protect against credible attacks from various adversary scenarios. The NRC's comprehensive licensing framework is flexible and adaptable, and will be updated as necessary to reflect protective measures to address the changing threat environment. In the event the NRC determines that additional measures are needed to protect against a potential threat, the NRC would supplement its requirements by rule or order, as appropriate.

The commenters failed to demonstrate that a "nuclear proliferation and terrorism assessment" would provide significant and meaningful information that would enhance the NRC's decision-making when licensing an ENR facility. As discussed in response to petition Assertions 1 and 2, the NRC has determined that in light of the current comprehensive licensing framework, revising 10 CFR part 70 to require a proliferation assessment would not assist the NRC in carrying out its statutory responsibilities.

**Comment Category 10:** *Proliferation risks should be assessed early in the regulatory process.*

Four comment letters supporting the petition included comments in this category. One commenter stated that it is imperative that we understand what world we are about to create instead of discovering the proliferation consequences after the fact. Other commenters stated that it is important for proliferation assessments to be prepared before new nuclear technologies are licensed, instead of waiting to deal with situations in which technology may be proliferating due to commercial demands or because of clandestine use. One commenter stated that waiting to deal with such a situation is contrary to the agency's principal mission to protect the health and safety of the public and to assure the common defense and security.

**NRC Response to Comment Category 10:**

The safety and security of nuclear materials and facilities are assessed throughout the NRC domestic licensing process. As discussed in the response to the petition Assertion 2, the NRC's comprehensive licensing framework addresses proliferation risks by, for example, including requirements to prevent the unauthorized disclosure of classified matter and sensitive technologies, and provide physical protection of nuclear equipment and materials. The NRC's regulatory framework is adequate to address proliferation concerns throughout the licensing process. The NRC, however, acknowledges that future technologies may pose new or unique proliferation risks. Because the NRC's licensing framework is flexible and adaptable, if the NRC determines that a new technology or threat necessitates additional requirements to protect the public health and safety or promote the common defense and security, the NRC will supplement its requirements by rule or order, as appropriate.

**Comment Category 11:** *NRC's consideration of proliferation risks and the National Environmental Policy Act (NEPA).*

Two comment letters included comments in this category. Citing *San Luis Obispo Mothers for Peace v. NRC*, 449 F.3d 1016 (9th Cir. 2006), one commenter stated that the NRC is already obligated under NEPA to analyze proliferation implications of any new nuclear technologies because NEPA requires consideration of “the full range of risks to the common defense and security potentially arising from its licensing decision, and must consider all reasonable alternatives that could eliminate or mitigate those risks.” This commenter also claimed that the NRC has a “double standard,” because in its environmental impact statements (EIS) it addresses national security concerns that support licensing decisions but dismisses national security concerns that undermine licensing decisions as beyond the scope of the EIS. This commenter further claimed that the NRC demonstrates a lack of judgment by generally assessing a wide range of environmental impacts but not performing a thorough nonproliferation assessment of the proposed GLE facility. The commenter attached comments on the draft EIS for the proposed GLE facility for purposes of incorporating them in this PRM record.

Another commenter took the opposing view, asserting that NEPA does not require a nuclear proliferation assessment.

**NRC Response to Comment Category 11:**

Comments regarding NEPA are beyond the scope of the petition. The petition requests that the NRC implement a requirement to perform a nuclear proliferation assessment consistent with its statutory authority under the AEA. The petition did not request that the NRC implement a requirement to perform a nuclear proliferation assessment under NEPA. In addition, comments on the draft EIS for the proposed GLE facility are outside the scope of this PRM and

were addressed by the NRC in the final EIS issued in February 2012 (ADAMS Accession Nos. ML12047A040 and ML12047A042).

**Comment Category 12:** *U.S. obligations under binding United Nations Security Council Resolution 1540 paragraph 3(d).*

Two comment letters supporting the petition included comments in this category. Both commenters stated that a nuclear proliferation assessment by the NRC for sensitive technologies would implement U.S. obligations under binding United Nations Security Council Resolution 1540 paragraph 3(d) to establish, develop, review, and maintain appropriate effective national export and trans-shipment controls over materials, equipment, and technology that could assist the development of weapons of mass destruction.

One commenter stated that the framework for legal nuclear export controls codified in the Energy Reorganization Act of 1974 (ERA), the Nuclear Non-Proliferation Act (NNPA), and subsequent legislation supports the NRC's independent analysis of the proliferation significance of licensed nuclear exports. The commenter also stated that relevant Executive Orders and regulations provide appropriate procedures for Executive Branch agencies to provide relevant views on foreign policy and national security judgments in the licensing process. The commenter further stated that appeals procedures also enable license applicants or others to seek review of adverse decisions. Thus, the nuclear proliferation assessment sought by the APS will not disrupt NRC export licensing functions. Instead, the nuclear proliferation assessment will contribute to the achievement of important nonproliferation objectives.

**NRC Response to Comment Category 12:**

United Nations Security Council Resolution 1540 Section (3)(d) requires all United Nations-member states to adopt and enforce appropriate and effective laws against the



proliferation of weapons of mass destruction, their means of delivery, and related materials. The U.S. Government has established broad policies designed to address U.S. proliferation concerns. However, United Nations Resolution 1540 does not require the NRC to conduct a nuclear proliferation assessment in an NRC domestic licensing process. Similarly, there is no requirement in the AEA, ERA, NNPA, or other legislation requiring the NRC to conduct a nuclear proliferation assessment as part of its domestic licensing process.

It is not clear to which Executive Orders the commenter is referring, and the NRC is not aware of any Executive Orders requiring a nuclear proliferation assessment in an NRC domestic licensing process. To the extent that the issues raised by the commenter address broader foreign policy issues, other Executive Branch agencies have primary responsibility for addressing proliferation concerns and foreign policy initiatives.

Regarding the commenter's reference to export controls, the AEA and NRC regulations (10 CFR part 110) provide comprehensive export controls for nuclear equipment and material under NRC jurisdiction, as discussed in the response to petition Assertion 2. Other Executive Branch agencies are also responsible for implementing export controls for items of concern for proliferation purposes. For example, the DOC's Bureau of Industry and Security implements export controls over dual-use items under its Export Administration Regulations, while the DOS's Directorate of Defense Trade Controls implements export controls over items of a military nature under its International Trafficking in Arms regulations.

**Comment Category 13:** *Proliferation assessments aid safeguards.*

Three comment letters supporting the petition included comments in this category. One commenter stated that standards should be established to ensure that sensitive nuclear facilities are designed to support effective safeguards against any kind of diversion or misuse of SNM. This commenter also stated that requiring industries to prepare a nuclear proliferation

assessment will serve the nuclear industry as well, in that steps to facilitate safeguards are more likely to be incorporated into the design of the facilities rather than be retrofitted later with higher cost and reduced effectiveness.

Another commenter stated that the objective of institutionalizing the safeguards-by-design process “is to provide a procedure by which international and national safeguards, physical security, and other nonproliferation objectives are fully integrated into the overall design and construction process for a nuclear facility, from initial planning throughout design and construction and with benefit to operation; with the goal of increasing the safeguardability, protectability and proliferation resistance of facilities.” A proliferation assessment can determine whether a facility can meet higher safeguards standards or whether there is something inherent in the technology that makes it harder to safeguard. The commenter also asserted that the NRC needs to ensure that a proper assessment of laser enrichment technology is conducted. The commenter stated that the NRC must ensure that no sensitive information is publicly revealed and that the NRC must consult with DOE experts when reviewing the proliferation assessment on the GLE facility.

#### **NRC Response to Comment Category 13:**

The NRC agrees that effective safeguards against diversion and misuse of SNM are necessary. The NRC also agrees that incorporation of safeguards through application of the NRC’s MC&A and other related requirements early in the design phase can be more efficient than retrofitting them later. As discussed in response to petition Assertion 2, the NRC’s comprehensive regulatory infrastructure (specifically, 10 CFR parts 73 and 74), addresses the physical protection of SNM against radiological sabotage, theft, and diversion, and MC&A of SNM, protects against diversion and misuse of SNM. These NRC requirements have been and continue to be applied by applicants and licensees to facilities in early design phases. In

addition, the NRC staff is working with the DOE to assess if meaningful IAEA inspections can be implemented at a laser enrichment facility without improperly revealing classified matter.

The NRC agrees with comments noting that 1) Safeguards-by-Design is an important tool for addressing the implementation of safeguards requirements, and 2) it is important to design a facility so that classified information is not revealed. The term Safeguards-by-Design is a design process that considers safeguards requirements early in the design of a facility. As previously stated, the NRC's existing regulatory framework supports an enrichment facility applicant's assessment of safeguards considerations early in the design process of their respective facilities.

**Comment Category 14:** *Whether additional steps are needed to ensure that employees do not increase proliferation risks.*

Two comment letters included comments in this category. One commenter, supporting the petition, stated that history demonstrates that employees in the nuclear industry can increase the risk of proliferation. The commenter asserted that these technologies have spread covertly around the world in part because one individual (A.Q. Khan) stole plans from his employer (URENCO); therefore, additional steps are necessary to prevent employees from improperly gaining access to even more advanced nuclear technologies.

One commenter disagreed and states that A.Q. Khan invariably gets invoked in the proliferation discussion, but wrongly so. The commenter asserted that "the U.S. intelligence community was well aware" of A.Q. Khan's activities and A.Q. Khan continued his extended proliferation efforts due to politics and policy, not technological limitations.

**NRC Response to Comment Category 14:**

The NRC disagrees that it needs to take additional steps to prevent nuclear industry

employees from gaining access to and disclosing sensitive nuclear technologies and information to would-be proliferants. Parts 25 and 95 of 10 CFR include comprehensive requirements governing access to SNM and sensitive enrichment technology. These requirements are designed to ensure that: 1) access to nuclear technology is restricted to those with an appropriate clearance and a need-to-know, and 2) adequate controls exist to protect and prevent the unauthorized disclosure of classified information and the diversion of nuclear materials considered important to the national security. For example, access authorization requirements address an employee's suitability, trustworthiness and reliability before and during the time he/she is working at the facility. Additionally, periodic reviews of an individual's background and trustworthiness continue during the individual's employment. Upon termination, employees are informed of their continuing responsibilities with respect to protection of information. Violations of these requirements can result in civil and criminal penalties. The NRC conducts inspections to verify compliance with these requirements. In addition, as previously described, the NRC regularly coordinates with other Federal agencies, including the intelligence community, to assess potential and real threats to information, facilities, and individuals.

**Comment Category 15:** *NRC should follow the DOE's example of conducting nonproliferation impact assessments in the context of major proposed actions involving domestic processing of SNM.*

One comment letter supporting the petition included comments in this category. The commenter stated that the DOE has conducted several nonproliferation impact assessments in the context of major proposed actions involving domestic processing of SNM and that the NRC should follow its example.

**NRC Response to Comment Category 15:**

For the reasons discussed in response to petition Assertion 2, the NRC has determined that its existing licensing framework is adequate and preparing a proliferation assessment would not assist the NRC in carrying out its statutory responsibilities to protect the public health and safety and promote the common defense and security. Therefore, it is unnecessary for the NRC to require ENR facility applicants to conduct such assessments. The NRC, however, will continue to work closely with other Federal agencies to ensure that its licensing activities are consistent with broader U.S. nonproliferation goals and policies and that nuclear materials and technologies continue to be used in a safe and secure manner.

**Comment Category 16:** *NRC should require a proliferation assessment for all fuel cycle facility license applications.*

One comment letter supporting the petition included comments in this category. The commenter stated that the NRC should increase the scope of the petition by requiring proliferation assessments for all fuel cycle facilities seeking to produce, possess, and/or use SNM under 10 CFR parts 50 and 70, including mixed oxide fuel fabrication facilities and uranium conversion plants. The commenter suggested that the intensity of the review could be graded in accordance with the sensitivity of the facility.

**NRC Response to Comment Category 16:**

The NRC disagrees that proliferation assessments should be required for all fuel cycle facilities. Existing NRC requirements address proliferation risks and concerns at all fuel cycle facilities. As discussed in response to petition Assertion 2, the existing NRC licensing framework is adequate to address proliferation concerns associated with nuclear fuel cycle facilities by including requirements to prevent the unauthorized disclosure of classified matter

and sensitive technologies, and provide physical protection of nuclear equipment and materials. As for the suggestion that NRC staff grade its reviews based on the sensitivity of the facility, the NRC staff currently performs risk-informed reviews of license applications based on the risks associated with the types, physical and chemical forms, and quantities of materials to be possessed and used at the facility.

**Comment Category 17: *Policy-related issues.***

Nine comment letters included statements related to policy issues. Seven commenters supported the petition, and two commenters opposed the petition.

One comment letter questioned whether laser technology could increase the risk of plutonium production. The commenter questioned whether the SILEX technology, which is used to separate silicon and zirconium from other materials, could be adjusted to purify other kinds of materials such as SNM. The commenter further asserted that in the mid-1980s, the DOE pursued a Special Isotope Separation facility to separate plutonium 239 from other isotopes of plutonium. Pursuit of the technology (and the associated EIS process) was canceled, but it is unknown if the current laser technology could be adapted for the purification of plutonium.

One commenter supporting the petition stated that the NRC would be wrong to presume that it need not “pick sides” in this debate simply because SILEX will not be exported. The commenter went on to explain that in 1976, the United States deferred the commercial, domestic use of plutonium-based fuels because of the potential adverse proliferation implications of proceeding. Given this precedent, and the distinct possibility that the negative proliferation implications SILEX’s domestic deployment today might equal or exceed those associated with plutonium-based fuels in 1976, the commenter stated that it would only be prudent for the NRC to secure and formally evaluate the views of those primarily responsible for

providing for the nation's security. Similarly, another commenter stated the United States has previously abandoned a civil nuclear effort (reprocessing and recycling of plutonium) in order to combat proliferation and that, in this spirit, the NRC should make a rigorous and distinct proliferation assessment a new part of the licensing criteria.

One commenter opposing the petition stated that the petitioner has not made an adequate case for NRC consideration. The commenter stated that the petition confuses technical and licensing issues within the scope of the NRC's licensing processes with broader aspects of the U.S. Government's nuclear nonproliferation policy, which is outside the scope of the NRC's regulatory jurisdiction. The commenter stated that such policy involves a wide range of agencies within the U.S. Government, not just the NRC, and that the petitioner fails to acknowledge these substantial efforts.

Another commenter opposing the petition stated that Section 123 of the AEA requires that the DOS conduct an NPAS in developing agreements with other nations for peaceful nuclear activities. These Section 123 agreements reflect the views and recommendations of the Secretary of Energy and the NRC. Further, these NPASs are prepared in consultation with the Director of Central Intelligence in order to address relevant classified information. These assessments also: 1) analyze whether a proposed Section 123 agreement is consistent with the criteria set forth in the Act, 2) address the adequacy of safeguards and other control mechanisms, and 3) include peaceful use assurances.

#### **NRC Response to Comment Category 17:**

Regarding the comment that the SILEX technology is used to separate silicon and zirconium, SILEX Ltd uses a laser process to separate silicon and zirconium isotopes. This technology is different from the technology used for uranium isotope separation. The statement that laser technology could be adjusted to purify other kinds of materials such as SNM is

speculative. The NRC is not aware of and the commenter has not provided any information to support the assertion that laser technology could be adopted for the purification of, for example, plutonium. However, if new technologies present proliferation risks or threats not currently addressed by the NRC's comprehensive licensing framework, the NRC would take appropriate actions, consistent with its statutory authority to protect public health and safety and common defense and security, to address those risks or threats.

The NRC disagrees that the NRC needs to "pick sides" in the debate over SILEX and that the NRC should require a nuclear proliferation assessment in the spirit of the U.S. abandonment of reprocessing. As discussed in response to petition Assertion 6, the NRC is an independent regulatory agency; the NRC does not encourage or discourage the development of any particular technology. Such national policy decisions are appropriately made by the President and Congress. For example, in 1976, it was President Carter, not the NRC, who established as a matter of policy that the United States would not engage in nuclear fuel reprocessing because of concerns about nuclear proliferation.

The NRC agrees that the petition mixes technical and licensing issues that are within the scope of the NRC's domestic licensing process with broader aspects of the U.S. Government's nuclear nonproliferation policy. While the NRC's comprehensive licensing framework is adequate to address proliferation concerns in domestic licensing, other Executive Branch agencies have the primary responsibility to address broader U.S. Government foreign policy initiatives and proliferation impacts outside of the NRC's domestic licensing activities.

As discussed in response to petition Assertion 1, the NRC agrees that the NPAS required under Section 123 of the AEA is required in the context of a bilateral agreement negotiated between the United States and another nation governing the peaceful use of nuclear energy. The NPAS does not address the domestic licensing actions of the NRC.



**Comment Category 18:** *Requiring a proliferation assessment would be feasible and would not be overly burdensome nor significantly impact licensing timelines.*

Two comment letters supporting the petition included comments in this category. One commenter stated that a nuclear proliferation assessment is feasible and should not be perceived as overly burdensome to the licensing process. A commenter stated that GLE carried out its own proliferation assessment of the proposed SILEX laser enrichment facility without creating delays or jeopardizing classified or proprietary information. Another commenter stated that it is highly doubtful that the addition of a proliferation assessment requirement would significantly alter licensees' timelines.

**NRC Response to Comment Category 18:**

The NRC has determined that preparation of a nuclear proliferation assessment is not necessary because it would not provide meaningful information beyond that which is already available to the NRC when conducting a domestic licensing proceeding. This determination was made independent of the time and resources involved in preparing such an assessment. This determination was also made by reviewing the petition, the public comments, the information sources available to the NRC related to the current threat environment, the existing comprehensive licensing framework, the division of responsibilities between Federal agencies, and the NRC's extensive experience dealing with domestic and international nuclear safety security matters through established communications channels. Based on this review, the NRC has determined that its existing licensing framework is adequate to address proliferation concerns. Requiring a separate license-by-license nuclear proliferation assessment would not enhance the NRC's ability to carry out its statutory responsibility to protect the public health and safety and promote the common defense and security.

**Comment Category 19:** *The Nuclear Threat Initiative (NTI).*

Two comment letters included comments in this category. Both commenters stated their support for the efforts of the NTI (also supported by former Senators Richard Lugar and Sam Nunn), which supports the worldwide safeguarding of all fissile materials that could be used to do harm to our Nation.

**NRC Response to Comment Category 19:**

Comments advocating support for the NTI are outside the scope of this petition because they are unrelated to the petitioner's request that the NRC require its ENR facility license applicants to perform a nuclear proliferation assessment. Nonetheless, the NRC notes that its comprehensive licensing framework requires the safeguarding of fissile material in domestic licensing activities.

**V. Determination of Petition.**

The NRC has reviewed the petition and the public comments. For the reasons set forth in this document, the NRC is denying the petition under 10 CFR 2.803. The NRC disagrees that an applicant seeking an ENR facility license should be required to conduct a nuclear proliferation assessment. The petitioner has not shown that the NRC's comprehensive licensing framework fails to adequately address proliferation risks associated with the licensing of an ENR facility. Additionally, the petitioner has not shown that ENR applicants have a particular insight on proliferation issues or have access to the intelligence resources, capabilities and information that would enable them to prepare a meaningful proliferation assessment that would assist the NRC in making an informed licensing decision. Furthermore, proliferation risks have and will continue to be assessed and addressed by the responsible agencies within the Executive

Branch. The NRC will continue to engage with and support the Executive Branch agencies with primary responsibility for assessing proliferation risks, and will continue to address proliferation risks in the NRC's comprehensive regulations for physical security, information security, material control and accounting, cyber security, and export control.

Dated at Rockville, Maryland, this 31<sup>st</sup> day of May, 2013.

For the Nuclear Regulatory Commission.

**/RA/**

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Annette L. Vietti-Cook,  
Secretary of the Commission.

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